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**Science
Citation
Index**

**SCIENCE
CITATION
INDEX
1965**

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you can answer vital questions like

these...in a matter of minutes.

1. Has this paper been cited?
2. Has there been a review on this subject?
3. Has this concept been applied?
4. Has this theory been confirmed?
5. Has this work been extended?
6. Has this method been improved?
7. Has this suggestion been tried?
8. Has this patent been cited in the journal literature?
9. Has this patent been elaborated by later patents?
10. Is there a new synthesis for this old compound?
11. Has this chemical been tested for biological activity?
12. Has this drug had a clinical evaluation?
13. Is this idea really original?
14. Was this "to-be-published" paper published and where?
15. Where's the full paper for this preliminary communication?
16. Has this technical report been published in a journal?
17. Have there been subsequent errata and correction notes published?
18. Where is the data for an introduction to this paper?
19. Where is the raw data for a review article on this subject?
20. Is there sufficient new information to warrant up-dating a chapter in a book?
21. What is the raw data for an analytical historical network diagram?
22. Who else is working in this field?
23. Is there data to delineate this field of study?
24. What are some potential new markets for this instrument?
25. Has this film been reviewed?
26. Has this book been reviewed?
27. What published work acknowledges this grant or contract?
28. Has this article been abstracted in primary journals?
29. Has this product been applied to a new field?
30. What are all the current works in which this man is primary author?
31. What are all the current works in which this man is secondary author?
32. What older works has this man written?
33. Have this man's works been compiled?

To locate sources which cite a particular paper, first look for the cited or reference author or patent number, located on the left.

For each cited paper by that author there is a dashed line which continues to the column reserved for the year of reference publication, followed by journal, volume and page. To the right of each cited patent is the year and country.

When a given reference has been cited more than once, the sources are arranged alphabetically by author. Each type of source item is further identified by a code. Note: only the first author is listed in the Science Citation Index proper. See the Source Index for all citing co-authors and full article titles.

	Cited Author	Citing Author	Reference Year	Publication	Source Year	Volume	Page	
Reference	SANDON IR	-----	*06	J AM CHEM SOC	-----	31	1359	
	KONIKOFF JJ	-----		AEROSP MED	64	35	703	
Source	-----	-----	12	J AM CHEM SOC	-----	37	1312	*before and after cited year identifies earliest paper cited for that author
	PASTERNAK R	-----		J CHEM PHYS	64	37	2064	
	-----	-----	12	PHYS REV	-----	37	403	
	FORMAN R	-----		J APPL PHYS	64	35	1653	
	-----	-----	13	J AM CHEM SOC	-----	38	107	
	BECKER JA	-----		J APPL PHYS	64	35	413	
	LAFFERTY JM	-----		J APPL PHYS	E 64	35	426	
	-----	-----	13	PHYS REV	-----	5	331	
	JAFFE LD	-----		NUCLEONICS	64 N	7	95	
	PANISH MB	-----		J CHEM PHYS	64	37	1917	
	SCHWARZ H	-----		REV SCI INS	64	35	196	
	-----	-----	13	PHYS REV	-----	5	333	
	STRICKLER H	-----		P SOC EXP M	64	110	311	
	-----	-----	13	PHYS REV	-----	5	452	
	FOX R	-----		REV SCI INS	L 64	35	79	
	HENSLEY EB	-----		J APPL PHYS	64	35	303	
	SARSON LM	-----	*60	FED PROC	-----	22	66	
	JOHNSTON CL	-----		J CLIN INV	A 64	43	745	
	-----	-----	60	J CLIN INVEST	-----	42	1017	
	KOPPEL JL	-----		SURG GYN OB	64	115	317	
	-----	-----	62	THROMB DIATH HAEM S	-----	7	49	
	HJORT PF	-----		THROMB DIAT	64	9	582	
	-----	-----	63	N ENG J MED	-----	267	859	
	SARSON LM	-----		N ENG J MED	C 64	268	1095	
	SASSI UR	-----	*5	PRIVATE COMMUNICATION	-----			
Reference	BARTON DH	-----		J AM CHEM S	64	86	4085	
	-----	-----	54	J CLIN INVEST	-----	36	959	
Sources	WAHI PN	-----		I J MED RES	64	52	613	
	-----	-----	55	SCIENCE	-----	124	41	
	KROMAN HS	-----		AM J OPHTH	64	55	79	
	SEEGER E	-----		3125698 US	P 64			
	-----	-----	58	CITED INDIRECTLY	-----			
	SEEGER E	-----		N-S ARCHIV	64	245	103	
	-----	-----	64	J CLIN INVEST	-----	41	683	
	BARTTER FC	-----		ISR J E MED	64	77	182	
	BELL NH	-----		AM R RESP D	64	87	29	

Codes indicating type of source item

- A = abstracts of published items
- B = critical reviews of books, films, articles
- C = corrections, errata, etc.
- D = discussions, conference items
- E = editorials, editorial-like items
- I = items about individuals (tributes, obituaries, etc.)
- L = letters, communications, etc.
- M = proceedings from meetings
- N = technical notes
- P = patents
- R = reviews & bibliographies
- Blank = articles, reports, technical papers, etc.

non-journal entry (lozenge symbol)

	Reference Patent Number	Reference Year	Reference Inventor	Reference Country	Reference Application or Reissue			
	1017880	-----	*57	CALGW	-----	GERM	APPL	
	WARSEWA HR	-----		3121350 US	P 64			
	1029445	-----	*58		-----	GERM		
Source Author	GRAHAM HS	-----		3119642 US	P 64			
	YAMAZAKI T	-----		JAP J EXP M	64	34	25	Source Volume
	1107202	-----	*14	SAVAGE	-----	US		
	DYSON WN	-----		P ROY SOC A	64	277	123	Source Page
	JONES JB	-----		25103 US RE	P 64			
	PFLIEDER K	-----		3120061 US	P 64			
	1110026	-----	*14	ZARS	-----	US		
Source Publication or Patent Number	WILSON WJ	-----		3118234 US	P 64			
	1110350	-----	*55		-----	FRAN		
	GIGNOUX DMP	-----		3120736 US	P 64			
	1111742	-----	*55		-----	FRAN		
	BOGAERTS LC	-----		3118259 US	P 64			
	ROSSEN HA	-----		3118229 US	P 64			
	1113905	-----	*14	PEASE	-----	US		
	FLEISSNE G	-----		3119168 US	P 64			
Codes Indicating Type of Source Item	1116654	-----	*14	WENZELMANN	-----	US		
	BENZING EP	-----		3118002 US	P 64			Reissued Source Patent
	MARTIN EW	-----		3119153 US	P 64			

SCIENCE CITATION INDEX - 1964 contains

- * three quarterly issues and a massive annual cumulative
- * each with exclusive SOURCE INDEX WITH TITLES

1st quarterly - July 1964

2nd quarterly - October 1964

3rd quarterly - December 1964

annual cumulative - March 1965

It is estimated by the end of 1964, SCIENCE CITATION INDEX - 1964 will include

- * approximately 2,000,000 reference citations
more than 80% journal citations with remainder: non-journal citations including patents, government reports, books, meetings, dissertations, contracts, circulars, personal communications, etc.
- * citations to more than 30,000 different publications indexed
- * approximately 200,000 current 1964 source items including all 1964 U.S. patents
citing approximately 1,000,000 unique works published in any period of recorded history
- * hundreds of key source journals processed across the life and physical and social sciences published in 1964
- * source journals from over 30 different countries
- * every major subject category within the scope of science

SOURCE INDEX WITH TITLES

The *Source Index* represents a major advance in the indexing of current source material by author. All source items processed for the *Science Citation Index* are indexed in order by first author.

Every entry for the primary author includes all co-authors and the full title of the item, as well as the publication, volume, page, year, type of source item (review, letter, correction, etc.), number of references in the bibliography of that source, the issue number, part and/or supplement number, and the ISI accession number for that journal issue.

The *Source Index* contains a "see" line for every secondary author of every source item. These "see" references include the first author, journal, volume and page for citation verification -- an exclusive feature of the *Science Citation Index*.

Now, for the first time, it is possible to determine a scientist's complete list of current papers without checking co-authors.

Exclusive with the SCI

```
ANDERSON WH
J AM MED A 186 763 64 8R N6 48283
PREVENTION OF POSTOPERATIVE PULMONARY
COMPLICATIONS - USE OF ISOPROTERENOL
INTERMITTENT POSITIVE PRESSURE BREATHING ON
INSPIRATION

ANDRIEU R TEL AKT
3120576 US 64 P 6R FEB 4
CL178/5.4 STABILIZATION OF MAGNETICALLY
RECORDED COLOR TELEVISION SIGNALS

ARAKAWA J SEE ARAKAWA K DIS NER SYS 25 437

ARAKAWA K ARAKAWA J
DIS NER SYS 25 437 64 R 24R N3 47534
SPLIT-THICKNESS SKIN GRAFT ON GRANULATED
WOUNDS FOLLOWING EXTENSIVE FISULECTOMY -
REPORT OF 150 CASES

ARBUBOB SY GENERALOV V
DAN SSSR 154 198 64 13R N6 49287
ARRANGEMENT COLLISIONS - 2-PARTICLE EXCHANGE

ARTHUR JBL LITTLE NF SMITH BW
J APPL BACT 27
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The data shown here is a simulation of the type of material which appears in the *Science Citation Index - 1964*. The data in these entries is fictitious.

COMPARE

SCIENCE CITATION INDEX

WITH EXISTING SERVICES AND LEARN

WHY SCIENTISTS THE WORLD OVER

ARE SPECIFYING

SCIENCE CITATION INDEX

FOR THEIR PERSONAL

INFORMATION REQUIREMENTS

Science Citation Index

concept oriented
experiential
a posteriori
cross-disciplinary &
comprehensive
indexing by trained subject
specialists not required
no decoding required

no cross-referencing
required

limited only by size
of world's literature
chronologically unrestricted
& flexible (new & old)
constant re-indexing
self-organizing
user goes both forward &
backward in time
negative result meaningful --
coverage fully defined &
decoding not required
portion of document
retrieved easily identifiable

Conventional services

semantically oriented
language limited
a priori
discipline-oriented &
selective
indexing (encoding) by
trained indexers required
decoding by trained users
required
cross-referencing required
("see" & "see-also"
references)
vocabulary for indexing
limited (10,000 terms)
chronologically restricted
(new only)

user can go only backward
in time
negative result uncertain
due to selective coverage
& decoding process
pertinent portion of
document not easily
identifiable

As you know, conventional indexes are language limited and semantically oriented. Indexing is based on the use of words which the indexer hopes is unambiguous. It is also tacitly assumed that the information in each indexed document is fixed and unchanging for all time. In reality, each of us interprets words differently and reads different meanings into each document. This is because the user has his own experiences to which he can relate, in an *a posteriori* fashion, the meaning he gives to that document. That is why we say citation indexing is *experiential*. The author who cites an earlier paper provides an insight which cannot, in practice, be achieved in conventional indexing. We also say the citation index is concept oriented. Each reference to the earlier literature identifies a unique conceptual relationship between the cited and the citing paper. It is not restricted by linguistic coding difficulties.

In conventional indexing from three to five descriptors or subject headings are usually selected which attempt to describe the "most important" topics in the source paper. Each source document is treated essentially as an independent unit, as though it existed in a vacuum.

In the *Science Citation Index*, not only is each new source document indexed, but it is also placed in proper perspective and relationship to the past literature. Each time a new document is indexed, the previous literature is simultaneously re-indexed in terms of its current utilization.

The indexing in conventional systems is permanent and static. As the nomenclature of science changes, classical indexes become more obsolete. To change this characteristic would require constant re-indexing. This re-indexing is precisely what is done automatically in the *Science Citation Index*. Each new reference to the old literature does, in fact, re-index the particular document cited. Thus, the citation index can be regarded as a self-organizing system where each new citation modifies the previously existing store of information.

In conventional indexes, the indexing or encoding must be done by trained indexers. The user must also be extremely well trained. He must learn to use each particular index, each particular preferred terminology. The best designed word index must therefore be highly cross-referenced to aid the user in the decoding process. Even for some of the most obvious synonyms, the various indexing and abstracting services, like the documents they must deal with, use different terms. However, in spite of the richness that is inherent in English and other languages, a typical large-scale alphabetic index will try to restrict itself to an authority list or a thesaurus of five to ten thousand terms.

In sharp contrast to the conventional index, the *Science Citation Index* does not require indexers trained in special nomenclature. This is not to say we do not use experts. We use the most expert subject specialists -- the authors who provide the citations, and by so doing, index the literature for us. Once the literature is processed, the index that is produced does not require decoding on the part of the user. Anyone can search the *Science Citation Index* with a few minutes of instruction. Cross-referencing and ambiguous terminology are completely eliminated. The size of the indexing "vocabulary" is literally unlimited since the concepts represented by each article or page in the literature is available to the author of the citing paper. In the same fashion the *Science Citation Index* avoids the difficulties of changing nomenclature and specialized jargons.

Another important difference between conventional and citation indexing is the time dimension. In the conventional index the source literature is the new or current year indexed. The chronological coverage of a conventional index corresponds to the coverage of the *Source Index* which accompanies the *Science Citation Index* proper. On the other hand the citation index proper not only indexes the current source literature, but merges the new with the older re-indexed data. Thus, the *Science Citation Index*, as a self-organizing system is constantly being upgraded by the feedback of more current information. Advances in science are quickly reflected in the index, thereby bringing old information up-to-date.

Consider now the basis for selecting the articles to be abstracted and indexed. Discipline-oriented services are selective. According to the interpretation of editors or abstractors, individual articles may or may not be covered. In the *Science Citation Index* complete coverage is guaranteed. Every source article, in every journal covered is indexed and every reference citation in every article is included in the index. When we say we cover an interdisciplinary journal like the *Proceedings of the Academy of Sciences USSR*, we do not cover just the physics or chemistry sections -- we cover all sections from astronomy to zoology. This comprehensive approach is vital because it gives a significance and degree of certainty to a literature search not hitherto possible -- especially when the result is negative.

In the conventional index, a negative result is not only uncertain due to selective coverage because you are never certain whether a particular article was covered in the particular index searched. It is also uncertain because your approach to the index, your decoding process, is usually different than that of the indexer. In the *Science Citation Index*, however, a negative search result is meaningful and not uncertain since the coverage is fully defined and no decoding is required.

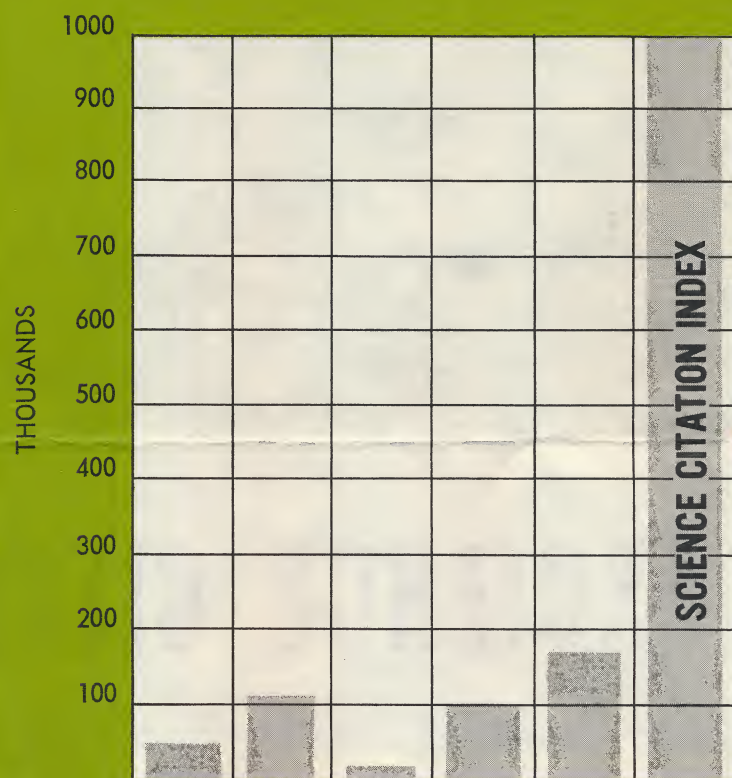
Another point concerns the ease with which one can locate the pertinent portion of the retrieved document containing the specific information desired. Thus, the indexing or abstracting services lead you to the document -- not the page or paragraph containing the information desired. This can be a time-consuming process, especially in a foreign language document. The *Science Citation Index* not only leads you to the source document which contains the information. In addition, the citation that caused the document to be retrieved, also identifies the pertinent paragraph involved. Then the decision can be made whether to read the entire paper or not.

After retrieving a document with the aid of a conventional index, you can search back in time through the bibliography. Your starting point, therefore, is very critical. If it is not the most recent paper, it is impossible to find all the current papers.

In the *Science Citation Index*, you not only go backwards in time through the bibliographies of documents, but also, you can come forward in time, retrieving documents even more current than your starting point. This added dimension enables you to build up your bibliography by alternately examining the citation index and items in the bibliographies of the papers retrieved.

For further reading, see also E. Garfield, "Citation Indexes for Science", *Science*, 122, 108(1955); E. Garfield, "Science Citation Index - a new dimension in indexing", *Science*, 144, 649(1964).

Compare the coverage of SCIENCE CITATION INDEX - 1964 to conventional discipline-oriented services



in 1963

the leading nuclear science abstracting service	46,000
the leading medical abstracting service	110,000
the leading physics abstracting service	25,000
the leading biological abstracting service	100,000
the leading chemical abstracting service	175,000

approximately 456,000
items indexed*

*Because of overlap among these services, this figure comprises about 325,000 unique items indexed.

SCIENCE CITATION INDEX - 1964
approximately 1,000,000 unique items indexed

By any measure this is more indexing than has ever been done for a single year by any conventional service we know of